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Stefan Vajda received his M.Sc. degree in Physical Chemistry in 1985 from the Charles University in Prague, Ph.D. degree in Chemistry in 1990 from Charles University and in 2003 completed his Habilitation in Experimental Physics at the Freie Universität Berlin. He joined the Chemistry Division at Argonne National Laboratory in 2002. Since 2007 he is an Adjunct Full Professor at the Chemical Engineering Department of Yale University.

His current research interest is in the area of physical and chemical properties of size-selected clusters and materials assembled of clusters. Specific areas of interest include nanocatalysis and photocatalysis on uniform sub-nanometer to few tens of nanometer particles, where the size/shape/structure and function relationship is studied under realistic reaction conditions by employing a variety of *in situ* characterization techniques. His other areas of expertise include the chemistry of size-selected clusters in the gas phase; femtosecond dynamics in clusters and molecules; coherent control of ultrafast laser-induced processes, ultrafast time-resolved spectroscopy on solvated molecular systems (e.g. organo-inorganic complexes in confined space, conformational changes in macromolecules, micellization of block copolymers, solvation dynamics & ionic sphere relaxation, energy transfer, substrate binding to enzymes, conformational changes of polymers, excitation energy transfer); steady state UV-VIS absorption, fluorescence and anisotropy spectroscopies; synchrotron-based X-ray scattering techniques. He serves on review panels and is a member of the Advisory Board of the Marcel Dekker Encyclopedia for Nanoscience and Nanotechnology.

He has more than 60 publications and presented more than 70 lectures.

Selected Publications

Supported clusters and cluster-based nanomaterials:

"Optical Properties of Au Nanoparticles Produced by the Assembly of Size-Selected Cluster Deposition: Covering the full Visible Wavelength Range in the Smallest Particle Size Regime", S. Vajda, G. Wiederrecht, A. Bouhelier, B. Lee, S. Seifert, G.Y. Tikhonov, N. Tomczyk, and R.E. Winans, *Col. Czech. Chem. Commun., invited contribution*, **72**, 121, 2007

"Highly Selective Catalytic Oxidation Reactions: I. Oxidative Dehydrogenation of Propane (ODHP) by Size-Selected Platinum Catalysts and II. Oxidation of Alkenes on Size-Selected Silver and Gold Clusters and Nanoparticles", S. Vajda, G. E. Ballentine, S. Mucherie, C. L. Marshall, J. W. Elam, M. J. Pellin, B. Lee, C.-T. Lo, S. Seifert, R. E. Winans, J. M. Calo, *Prepr. Am. Chem. Soc., Div. Pet. Chem.*, 2007, 52, (1), CODEN: ACPCAT ISSN:0569-3799.

"Supported Gold Clusters and Cluster-Based Nanomaterials: Characterization, Stability and Growth Studies by *In Situ* GISAXS under Vacuum Conditions and in the Presence of Hydrogen", S. Vajda, R.E. Winans, J.W. Elam, B. Lee, M.J. Pellin, S. Seifert, G.Y. Tikhonov and N. A. Tomczyk, *Topics in Catalysis, Special Issue „Nanotechnology in Catalysis”* 39, 161 (2006)

Chemistry of free size-selected clusters:

"Charge Transfer Initiated Nitroxyl Chemistry on Free Silver Clusters Ag_{2-5}^- : Size Effects and Magic Complexes", J. Hagen, L. D. Socaciu-Siebert, J. Le Roux, D. Popolan, S. Vajda, T. M. Bernhardt, and L. Wöste, *Intl. J. Mass. Spectr.*, **261**, Chava Lifshitz Memorial Issue, 152 (2007)

"Strongly Cluster Size Dependent Reaction Behavior of CO with O_2 on Free Silver Cluster Anions", L. D. Socaciu, J. Hagen, J. Le Roux, D. Popolan, T. M. Bernhardt, L. Wöste, and S. Vajda, *J. Chem Phys.* **120**, 2078 (2004)

Coherent control of photoinduced processes by tailored femtosecond laser pulses:

"Probing and Controlling Molecular Dynamics at the Subnanometer Scale with Tailor-Made Femtosecond Laser Pulses", S. Vajda, and L. Wöste, in *The Dekker Encyclopedia of Nanoscience and Nanotechnology*, Editors: J. A. Schwartz, C. Cotescu, and K. Putyera, Marcel Dekker, Inc., New York, *Invited review article, accepted*, 2008

"Deciphering the Reaction Dynamics Underlying Optimal Control Laser Fields", C. Daniel, J. Full, L. González*, C. Lupulescu, J. Manz, A. Merli, S. Vajda*, and L. Wöste, *Science* **299**, 536 (2003)

"Controlling the Vibration and Dissociation Dynamics in Small Molecules and Clusters", S. Vajda, and L. Wöste, in *Femtochemistry*, Eds.: F.C. De Schryver, S. De Feyter and G. Schweitzer, John Wiley-VCH, 2001, ISBNs: 3-527-30259-X (Hardback); 3-527-60018-3 (Electronic), Chapter 10, pp. 199-216

Ultrafast laser studies of molecular processes in the gas phase:

„Ultrafast Nuclear Dynamics Induced by Photodetachment of Ag_2^- and Ag_2O_2^- : Oxygen Desorption from a Molecular Silver Surface.“, L. D. Socaciu-Siebert, J. Hagen, J. Le Roux, D. Popolan, M. Vaida, S. Vajda, T. M. Bernhardt, and L. Wöste, *Phys.Chem.Chem.Phys.* **7**, 2706 (2005)

„Observation and Theoretical Description of the Periodic Geometric Rearrangement in Electronically Excited Non-Stoichiometric Sodium-Fluoride Clusters“, S. Vajda, C. Lupulescu, A. Merli, F. Budzyn, and L. Wöste, M. Hartmann, J. Pittner, and V. Bonacic-Koutecký, *Phys. Rev. Lett.* **89**, 213404-1 (2002)

„The Relaxation from Linear to Triangular Ag_3 Probed by Femtosecond Resonant Two-Photon Ionization“, T. Leisner, S. Vajda, S. Wolf, L. Wöste, and R.S. Berry, *J. Chem. Phys.* **111**, 1017 (1999)

„Angular Dependences of Third Harmonic Generation from Microdroplets“, J. Kasparian, B. Krämer, J.P. Dewitz, S. Vajda, P. Rairoux, B. Vezin, V. Boutou, T. Leisner, W. Hübner, J.P. Wolf, L. Wöste, and K.H. Bennemann, *Phys. Rev. Lett.* **78**, 2952 (1997)

Ultrafast molecular dynamics in the liquid phase:

“Femtosecond through Nanosecond Time Scale Solvation Dynamics in Pure Water and Inside the γ -Cyclodextrin Cavity“, S. Vajda, R. Jimenez, E.W. Castner, Jr., S.J. Rosenthal, V. Fidler, and G.R. Fleming, *J. Chem. Soc. Faraday Transactions* **91**, 867 (1995)

“Nanosecond Fluorescence of Tryptophans in Cytochrome P450_{SCC} (CYP 11 A1): Effect of Substrate Binding“, P. Anzenbacher, J. Hudecek, S. Vajda, V. Fidler, C. Laroque, and R. Lange, *Biochem. Biophys. Res. Commun.* **181**, 1493 (1991)

“Time-Resolved Fluorescence Study of Chain Dynamics. I. Poly(Methacrylic Acid) in Dilute Water Solutions“, B. Bednar, S. Vajda, V. Fidler, J. Trnena, P. Svoboda, and K. Prochazka, *Macromolecules* **24**, 2054 (1991)

“Time-Resolved Fluorescence Study of Micellizing Block Copolymers“, K. Prochazka, S. Vajda, V. Fidler, B. Bednar, E. Mukhtar, M. Almgren, and A.S. Holmes, *J. Mol. Struct.* **219**, 377 (1990)